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SURGICAL LECTURES.

Theatre, St. Thomas's Hospital, Monday Evening, April 12. 1824.*

LECTURE 53.

On Poisons.

Poisons are those substances which, in small quantities, produce deleterious effects on the human body. Though this is considered the best definition of poisons, yet there is no substance considered as poisonous, which in very small doses is not capable of producing a beneficial effect. Several of the poisons, indeed, in minute and well regulated doses, produce the best possible effects; arsenic is an example of this.

Poisons are derived from four sources, viz: there are those from the *animal* and *vegetable kingdom*---there are the *mineral and chemical* poisons---and the last is furnished by man himself, called *morbid poisons*.

You will find such a difference with regard to the effects of morbid poisons, when compared with the other three, that you will speedily relinquish any opinion you might have formed respecting a supposed reciprocity of action between them.

In tracing the operations of poisons, we find some of them affect the vascular system, others the nervous, while many poisons affect both nervous and vascular systems at the same time. In looking at poisons from many animals, for example, we find the first action in the arterial system, while the influence of others evidently begins in the nerves. The poison communicated by the viper and rattle snake attacks the arterial system first; that from the bite of a rabid animal influences the nervous system first; but ultimately in these cases both become affected; thus then some poisons affect the nervous system others the arterial, and others both.

With regard to the vegetable poisons; all of these act on the nervous system; persons who have been destroyed by these poisons, have been said, upon examination, after death, to have had inflammation of the inner coat of the stomach, because in some instances the vessels have been found larger and more filled with blood than in others. This appearance however is common in cases of sudden death where there has been congestion of the vessels of the stomach. The appearance is not the effect of inflammation, it has nothing of the character of inflamed mucous membrane and is entirely destitute of that vivid redness which ever accompanies the latter; No; the influence of vegetable poisons is directly on

* In the date of the last Lecture for 15th read 8th.

the nerves and in the next lecture I will shew you a curious experiment with one of these poisons, when, you will have an opportunity of seeing an animal taking food almost at the very moment of its death; the dissolution of the animal will occur in a very few minutes after the introduction of the poison under the skin; so that the shortness of the time in which the effect is produced will shew the impossibility of its having been the result of inflammation. Thus gentlemen, will vegetable poisons destroy life by direct influence on the nervous system without giving rise to the slightest inflammation. Mineral poisons destroy, some by arterial, and some by nervous influence; but those which are most commonly taken are arsenic, muriate of barytes, and oxamuriate of mercury, and each of these produces violent inflammation. With regard to arsenic it has a direct influence on the nerves as well, and all of you must have seen it produce the most powerful convulsions immediately after it has been taken. In those who have been destroyed by lead, no appearance of inflammation has been found in any part of the body, no such mark either in the stomach or any portion of the intestinal canal; the inner coat of the stomach in many of these cases appearing less vascular than usual, which evidently proves that death is not produced by inflammation in this part, but that it is the result of a direct influence of the poison upon the nerves.

The action of morbid poisons is various, some being on the arteries, some on the nerves; in typhus fever, more commonly called gaol fever, which arises from the number of persons crowded together rendering the air impure and unfit to sustain the vigorous actions of life; the first effects manifest themselves in the nervous system, producing great depression on the mental and bodily powers and through which influence the persons are destroyed. It renders the patients at an early period of the complaint incapable of being roused, so great is the depressing influence on the nerves.

Many of the morbid poisons act directly on the arterial system; as for example, small pox; here inflammation is first produced, which is succeeded by fever, the suppurative process, considerable local irritation, and the secreted matter capable of propagating the disease; other morbid poisons as measles for example, first affect particular parts and afterwards the entire system; in measles we first see the conjunctiva inflamed, then the mucous membrane of the nose becomes affected, producing an increased secretion of that part, then the trachea and bronchia become similarly influenced, and at length the lungs give rise to a troublesome cough, and about that time the fever occasioned by the disease becomes general throughout the system. The affection of measles is so easily communicated, and the infectious matter so subtle, that it readily floats in the air, and is of so infectious a

nature, that it generally runs through entire towns and villages where any portion of the children become affected by it, and the air is likewise capable of communicating the disease to the inhabitants of distant parts. But the most infectious of all the diseases with which I am acquainted, is that called mumps. If this disease makes its appearance in a school, more than half the children will become affected by it. I was some years ago attending a patient at Hackney with Mr. TOULMIN, at a school were there were more than sixty scholars, some of whom at the time were afflicted with the mumps; at a subsequent period, I inquired of Mr. TOULMIN how many of the scholars had been attacked by it, and he informed me thirty-six or thirty-seven, and that it had afflicted considerably more than half.

Poisons diminish in effect by repetition; therefore opium, if given for any considerable time, will lose its influence, if the quantity be not increased; now morbid poisons by repetition likewise lose their influence; it very rarely happens that any gentleman passes through his apprenticeship at the hospital, without being affected with the hospital fever, and it not unfrequently happens that the first attack is fatal, and more particularly so to young men who are fresh from the country, and who have been accustomed to a fine wholesome air; it generally commences by head-ache, and which is succeeded by fits of shivering. If the fever should attack the individual a second time, which it seldom does, it will be slight, and its effects insignificant, compared to those in the first instance. The same thing happens in scarletina, the fever being much less the second time than the first; the inflammatory symptoms therefore are mitigated, and much less severe. In vegetable poisons, the effects upon the body are generally proportioned to the quantity of poison taken; not so, however, with morbid poisons, for no particular influence is manifested, whether the quantity inserted be large or small, whether the point of the knife be loaded with the poison, or whether it be slightly touched with it; its effects depend upon the state of the constitution at the time the poison is introduced; its action is modified by the peculiar condition of the patient and not upon the quantity of the poison. In opposition to this result, Dr. FORDYCE believed that if the poison were diluted, that its influence would be much less severe; accordingly he tried some experiments, attempting to prove this, and exceedingly diluted the poison with water; the effects, however, were precisely similar to those excited by the poison in its concentrated state; he, therefore, relinquished the opinion as untenable. This, then, is a remarkable difference between vegetable and morbid poisons; the first produces effects in proportion to the quantity taken, whereas in the latter the quantity of poison makes no difference in its particular specific action, but this is regulated by the peculiar condition of the patient. Whether mor-

bid poisons be taken from the dead or the living, their influence appears to be the same; a medical man whom you all respect very much, innoculated his child for small-pox with matter taken from a subject in the dissecting-room; this was exceedingly wrong, such matter ought not to be made use of, and I merely mention this fact to you for the purpose of shewing that the virus, under these circumstances, will produce the disease, and even in its mildest form, for the child of this gentleman did extremely well, and had the disease favourably.

Now, as to the time when the influence of vegetable and animal poisons begins to shew itself, there is likewise a very great difference; the most powerful of the vegetable appearing in many instances almost immediately (however, in this respect, there is some variety;) whereas, the symptoms arising from morbid poisons are often protracted to very distant periods. In natural small-pox the disease generally appears fourteen days after the infection has been received: in inoculated small-pox about the tenth day; the cow-pox the ninth or tenth; in scarlatina the seventh day; but I have known it shew itself on the third day. I knew a lady whose family was exposed to the infection of scarlatina; the disease appeared in one of her children at the end of three days; in another on the fourth; in another on the fifth; and in herself at the end of three weeks or a month. I knew another child in whom the disease did not appear until the expiration of seventeen days.

The measles usually appear from seven to fourteen days after infection, but generally about the eighth day: it is quite right that you should be acquainted with these particulars, for parents will think little of you if you are incapable of answering such questions: well then, natural small-pox about the fourteenth day; measles from the seventh to the fourteenth; and scarlatina about the end of a week.

If children have imbibed the infection, it is wrong to prepare them for the consequences; for where children are so treated they are invariably worse. With respect to scarlatina, the less the fever is which attends the disease, the greater I consider the danger to be from the local consequences after the specific malady has terminated.

I will now say something of individual poisons; first I must observe that there is a remarkable difference as to the time when the effects of morbid poisons begin to be manifested; in some instances twelve months have been known to elapse after the insertion of the poison before the symptoms appeared. Dr. BABINGTON published a case in the Medical Researches, where he stated that the symptoms were not apparent until the three hundred and sixty-fourth day after the insertion of the poison. Even the effects of marsh miasmata do not in some instances show themselves for some months after the infection has been received. A lady went into the country in August, having with her two children and two servants. The part of the country in which they resided

during their absence was damp and boggy; she returned again the following October; at Christmas the youngest child was attacked with an intermittent fever, and a few days afterwards the same disease appeared in the person of the eldest daughter; in succession the two servants, likewise had it. Well then, here was an example in which the seed of an intermittent had been sown more than two months before the symptoms were apparent.

Those persons who have had ague, and who are subsequently assailed by fevers, or even the slight fever attending a cold will have it assume a typhoid character; what I mean is, that fevers in those individuals who have had ague will generally be of a typhoid nature.

Well then, I will now speak more particularly of

Animal Poisons—the Wasp and the Hornet.

The sting of the wasp and the hornet gives rise, in many cases, to very great pain and severe inflammation. The best application to mitigate the effects of those stings, is composed of one drachm of opium rubbed down in an ounce of oil; put some of this on lint, and lay it over the wound, occasionally changing it; at the same time you should keep the bowels open by aperient medicines.—The poison communicated by

The Bite of the Viper,

not unfrequently proves destructive to life; it has both a nervous and arterial influence. A gentleman who was once in company with me on a shooting excursion, upon seeing a viper on the side of a bank, struck it with the butt end of his gun, and supposing that he had killed it, put his hand towards it for the purpose of taking it up; the reptile, however, was not dead but had merely formed itself into a coil, and sprang upon the gentleman's finger; he instantly sucked the wound, and shortly afterwards his tongue became paralyzed, and for a time entirely lost the faculty of speech; this clearly shews that the poison of the viper has a direct influence upon the nerves, and that it affects the vascular system is also equally evident, for in the case of this gentleman the inflammation of the finger was very great, and extended up the arm even to the shoulder; by taking aperient medicines and the application of poultices, this gentleman ultimately recovered.

There was a man sometime since admitted into this hospital in consequence of the bite of a viper; the power of speech in this patient had but imperfectly returned after a lapse of six months from the infliction of the injury. When I was formerly trying some experiments in comparative anatomy, I was anxious to see what effects were produced upon living structure by the poison of vipers and with a view of ascertaining, I confined a rabbit and viper together and by irritating the viper induced it to bite the ear of the rabbit; the wounded ear soon began to droop, as did also the other ear shortly afterwards; the animal was soon seized with

convulsive motions which were quickly followed by death; upon dissection the part which had been bitten was quite black, and the cellular tissue on that side of the animal where the wound had been given, after the skin had been stripped off, appeared to have been discoloured by extravasated blood. A rattlesnake that was confined in a cage some time since bit a man in the finger; he was attended by Sir Everard Home; the inflammation rapidly extended up the arm and to several parts of the body; abscesses were produced, and after languishing several days in great suffering the patient died.

Treatment of the Bite of Vipers.

I tell you what I once did for myself when I met with an accident of this kind, when trying the experiments to which I have just now alluded among others. I was in the habit of freezing reptiles—you all know that a frog may be frozen so completely that by slightly pulling the legs, the joints will crackle and break, yet by the application of gentle and well regulated heat the muscles of the animal upon the melting of the blood will begin to tremble, soon regain their natural functions, and a few minutes after having been apparently dead and converted into a solid piece of ice, it will be seen hopping about the room.

Vipers also may be frozen, and will regain their actions in a similar manner. On one occasion, after having taken a frozen viper out of the freezing mixture, and not suspecting that it had so quickly regained its native state, I was bitten by it on the back of the hand; this happened one evening at lecture, and the late Mr. Fox, the dentist, who was present, and at that period a pupil of mine, at my desire immediately excised the wound by means of a lancet, and I applied a bandage tightly round the wrist for the purpose of preventing absorption in case any of the poison had remained. This treatment completely succeeded, and not a single bad symptom followed the injury. This is the plan then, that I always advise you to pursue in cases of this kind—cut out the part which has been stung, and apply a ligature above the wound, if the situation will admit of it with a view of preventing absorption. With respect to the poison of rabid animals producing the disease called

Hydrophobia,

And which disease is so different in its character, so opposed to those arising from any of the other poisons, so marked in its nature, so horrid in its effects, that upon seeing it you could not hesitate to form a correct opinion as to the nature of the malady. The first symptom a person experiences who has been bitten by a rabid animal is pain in the injured part, and this is usually felt from the third to the fifth week, the next symptom is a sense of chilliness succeeded by rigor and heat, then a difficulty of swallowing is felt, not of liquid in particular, but of any substance; this arises from the consitution of the muscles of the pharynx, and so violent are the spasms of the throat, that upon

producing the patient any thing to swallow, you would think they would directly occasion suffocation; he will desist from the attempt, and tell you he will try again by and bye; upon again applying the cup to his lips he will be seized with the most horrid shuddering, turn away to avoid the sight of what he was about to take, and sit down in a state of exhaustion. It has been said, that persons having this disease bark like a dog; this is not true, as the noise is occasioned by violent inspirations, whereas the barking of a dog is the effect of expiration.

In Hydrophobia there is generally extraordinary irritability. I have seen two or three examples where the slightest touch of the bed-clothes would produce a sudden impetuous passion: and in two children whom I have seen, they would beat away the bed-clothes, and could not suffer them to cover their bodies. If you direct a patient having hydrophobia to go into a warm bath, he does not object, but will tell you he will try; upon approaching the water, however, and putting in his foot, he will immediately jump, and tell you he cannot enter the bath. By persuasion, they have afterwards plunged in, when the violence of the convulsions were such, that if not immediately removed, they would have been drowned.—When in the bath, even the slight waves striking against the neck give rise to the most dreadful spasms; and in one case, when the patient was in the bath, and the medical attendant dashed some of the water against his face, he exclaimed, in great agony, "Oh, don't; that is cruel, that is too bad, I cannot bear it." I mention these circumstances for the purpose of shewing you that in hydrophobia there is a great excitement of the nervous system, and it is quite erroneous to suppose that all the symptoms of the disease are produced by inflammation. In hydrophobia and tetanus, the symptoms very nearly approach, yet in the two diseases there is a very great difference.

On the dissection of those who have died of the hydrophobia there has been found inflammation of the internal surface of the phaynx; the mucous and muscular coats of the stomach similarly inflamed, and the muscular fibres of the latter in a state of violent contraction, the contents of the stomach not digested. Now these appearances are not sufficient to account for the symptoms, and the cause certainly resides in the nervous system; he who supposes, therefore, that the disease depends upon inflammation and treats it by bleeding, does not entertain correct views of the disease; he is quite mistaken in its character. Two or three cases were treated by copious venesection some years ago in the East Indies, the symptoms, however, were not those of hydrophobia, but of inflammation of the œsophagus. A man some years ago, in the other hospital, had symptoms resembling hydrophobia; he never had received a bite, and upon examination after death, the œsophagus

situated behind the heart was found to be greatly inflamed, the symptoms were not of Hydrophobia, but of inflammation of the œsophagus. A man some years ago in the other hospital, had symptoms resembling hydrophobia; he never had received a bite, and upon examination after death, the œsophagus situated behind the heart was found to be inflamed.

I advise you, gentlemen, to read the paper which I before alluded to, published by Dr. BABINGTON, in which a complete history of the disease was given, and you will there see that the loss of blood does not tend in the slightest degree, to relieve the malady.

The two first cases that I saw were treated by bleeding; the loss of blood reduced the strength, but did not mitigate the symptoms: on the contrary, I think the irritability was increased from the weakness which the venesection occasioned.

A rabid animal will at first lap fluids, but cannot take solids; will throw his meat among the straw, and bite at every thing near him: his master will take his food to him, who will be treated by the animal at first in the customary manner; as the disease advances, however, the respect and attachment to the master becomes lost, and the animal will bite him likewise. —After lapping a little water, the dog will take hold of the vessel between its teeth and then dash it to the ground; thus it will be observed that the natural character of the animal remains for a long time unchanged. A gentleman living in a village had a pointer with this disease; he behaved as well as usual in the field,—would stand, bark, and bring the game; but after the sporting was over, he would bite any animal that came near him, and at length ran entirely away. Upon examining dogs that died of this disease, there has been a slight inflammation observed upon the internal surface of the stomach and pharynx, a sort of efflorescence, and all human beings who have died with this disease have been said to have had more or less a similar appearance.

A few words on the

Treatment of Hydrophobia,

and I shall then conclude. The best mode that can be adopted is, immediately after the part has been bitten, to cut it out; you should first ascertain at what depth the teeth have entered, by means of a probe, and then take care to excise a sufficient quantity, and leave no part of the injured integument, cellular membrane, or muscle remain. If persons should object to the use of the knife—foolishly object to have the poisoned part cut away, I advise you in such cases to let sink into the wound a small piece of the potassa fusa; this will readily dissolve, and becoming liquid, its cauterizing influence will be communicated to each part of the wound, and thus destroy the influence of the poison; the best plan decidedly is the immediate excision of the part, and where it has been done directly after the injury, it has, I believe, in every instance

been successful in preventing the disease; if this practice should be opposed, the next best plan is the employment of the potassa fusa. I am speaking of these means, you will observe, as preventives, and as for medical remedies, when the symptoms of hydrophobia have once appeared, I am not acquainted with any. Every medicine, I believe, has been tried over and over again, and all have been found alike ineffectual; the only thing in the way of medicine that I think calculated to do good is that which has lately been adopted in France, viz. the injection of warm water into the veins. To make the employment of the remedy safe, however, and to prevent pressure of the brain, the same quantity of blood should be previously abstracted, as it is intended there should be water injected; with this precaution, I think the remedy a very proper and feasible one. I may here remark that the blood need not be abstracted before the injection of the water, but may be let flow from one vein while the water is thrown in at another, and this probably would be the better plan.

LECTURE 54.

Wednesday Evening, April 14.

Of Vegetable and Mineral Poisons.

It remains that I should say a few words on the subject of vegetable and mineral poisons: One of the vegetable poisons is hemlock; I have not myself seen any instance of its proving destructive to life; the common effects which it produces are giddiness, vomiting, and very severe pain in the head. The effects of this poison are known rather from history than from any recent observations which have been made with respect to it. The Greeks were in the habit of putting to death by this poison, persons who had forfeited their lives to their country; and it was by this poison, as most of you are aware, that SOCRATES was destroyed. It does not appear from the accounts which history has transmitted to us, that SOCRATES suffered much in his last moments, since we are told that, during the time he was drinking the hemlock, he said a cock should be sacrificed to ÆSCULAPIUS for the ease with which he departed life. Tobacco is a highly poisonous substance, though it is rarely given in such quantities as to prove destructive to existence.—I have known it, however, destroy life both when used as an injection, and when applied externally. I will mention a circumstance which occurred to me, in order to put you upon your guard with respect to the use of tobacco enemas. I witnessed an instance of this some years ago in the other hospital, in a young woman who had strangulated hernia. A drachm of tobacco in a pint of warm water was injected into the intestines to assist in diminishing the strangulation.—

There were no previous symptoms which led me to suppose that the patient was near her dissolution, but soon after the injection was administered she became exceedingly depressed, a deadly paleness overspread her body, she had a cold perspiration, vomiting increased to a great degree; soon after she became insensible, and in that state she died. This was not more than three quarters of an hour after she had taken the tobacco enema. On this account I mentioned to you when I was on the subject of hernia that it was dangerous to use this substance without feeling your way in its employment. It is better not to inject at first more than half a dram of tobacco in half a pint of water; if the patient should not be affected by this quantity, another half dram may then be employed. I am aware that two drams or more are sometimes injected without any bad consequences, but this is in cases where the patient has considerable strength of constitution. Where the constitution is delicate and weakly even a dram of tobacco used in an injection will sometimes prove destructive to life. I shall now mention to you another circumstance respecting the external application of tobacco. The mother of a boy, who was the subject of tinea capitis having heard that tobacco was the best remedy for this complaint, went to a tobacco dealer, and bought some tobacco juice, which, as I afterwards learnt, is prepared in the following way:—

A quantity of moist tobacco is placed between two rollers, and very strongly pressed, so that the juice exudes, and in this way an extract of tobacco is produced of the very strongest kind. It is used for the purpose of destroying insects, and it is also employed in eruptive complaints of sheep and other animals. The woman put this preparation on the head of the boy, at one o'clock in the afternoon; very soon after he became pale, and extremely sick. Feeling that purging was coming on, he went to a necessary, at the back of the house, where he staid so long, that his mother went to look after him, and found him with his clothes unbuttoned, sitting in an almost insensible state, with his head resting on his shoulder. He had had a copious evacuation into his clothes; he was carried up stairs, put to bed, and at four in the afternoon he died. A surgeon in the neighbourhood hearing of these circumstances, communicated them to me. I attended for the purpose of examining the body, and did not find any appearance of disease. There was a little effusion of fluid between the scalp and the bone, but none in the membrane or ventricles of the brain. If tobacco be introduced in any quantity into the stomach of animals, it kills very quickly, putting a stop to the action of the heart. The oil produced from tobacco by burning it is highly poisonous; it destroys if administered in very small quantities. With respect to its introduction by smoaking, I have

never known an instance of death being produced by it in this way.

Opium administered in considerable quantities, destroys life, by producing apoplectic symptoms. The first case of the destruction of life by opium, which I had an opportunity of witnessing, was one in which the person was suspected of having committed a murder. He was seen at a great distance from the spot where the murder was committed, very shortly after the crime was perpetrated, but it appeared he had ridden with extraordinary speed; his horse was excessively heated. It was proved that he had passed through a particular gate, soon after the murder, and other strong circumstances of suspicion concurred so as to leave little doubt of his guilt. Finding that he was likely to be brought to trial on this charge, he determined to destroy himself, and for that purpose he took a quantity of solid opium. The quantity which he took was not exactly ascertained. At 12 o'clock in the day he had apoplectic stertor; on putting a candle to his eye, the pupil did not contract and he was in a state of insensibility. Attempts were made to produce vomiting without success, and at nine o'clock on the following morning he died. —On examination of the body after death the stomach appeared to be very much reduced, and a considerable quantity of solid opium was found in it. In all cases of violent death from opium, reddened appearance of the stomach will be found; I do not however believe that it is really inflammatory; inflammation and a mere error loci from determination of blood are very different states of parts. I do not believe that opium has the power of producing inflammation of the stomach, and I mention this that it may guide your judgment if you should be called upon to give evidence in a Court of Justice, in a case of this kind. You should make up your minds never to give an opinion as to the death of an individual being produced by a vegetable poison, unless you find that vegetable poison in the stomach, or some other strong proof be given that it was administered. No appearances after death ought to induce you to take an oath that an individual has perished by a vegetable poison. I here mention that Mr. HUNTER himself used to lament that he had not taken the same precaution on the occasion of a trial which agitated the public mind very much forty years ago. He regretted that he had not made more experiments on the subject of poisons before giving an opinion in a Court of Justice. He found himself a good deal embarrassed on that occasion, the lawyers took advantage of his embarrassment, and he used to express his regret publicly in his lectures that he had not given more attention to the subject before he ventured to give an opinion in a Court of Justice. When opium is taken in considerable doses for a length of time, the result is that it renders the complexion of the person extremely sallow, it produces obstinate costiveness, and indeed arrests all the secretions. It also very much diminishes the virile power and the disposition to social in-

tercourse. I have known several instances of its producing this last effect, when it has been taken for a length of time. We read indeed that the Turks are in the habit of taking opium for the purpose of increasing the propensity to indulge in sexual intercourse, but as far as I have had an opportunity of judging of this fact, opium produces quite an opposite effect. A gentleman, who had taken opium very freely in consequence of the exhilarating effects it at first produced, told me that for a long time he had suffered no inconvenience from it, and that he always found his pulse increased in quickness by its use. In general the pulse is not increased in quickness; persons who take opium have a quick pulse, which becomes slow and full under each additional dose, and at this time they feel increased strength and exhilaration. In some cases, it is true, opium produces a quickness of pulse. A student of this Hospital, who made a number of experiments to ascertain the effects of opium, found that when he took it in considerable doses his pulse rose from 75 to 86, and then began to decline till it fell to 65. Opium, when taken in considerable quantities, after a time puts a stop to all the secretions; the semen is secreted in very small quantities, and in some cases it is scarcely secreted at all. A married man, who took opium very freely, declared to me, that though he slept very regularly with his wife, it was rather a matter of ceremony than of practical duty, for he never felt the slightest disposition to sexual intercourse. I knew a man who had during two years taken very large quantities of opium for pains in his bowels, who also declared to me, that he never had the least inclination for amatory indulgence. The nerves are rendered highly irritable by opium. A gentleman, who was in the habit of taking opium, came into my room, where the window was not quite fastened, and the wind whistled a little behind it. After chatting for a short time, he rose in a state of violent agitation, and rushing to the window exclaimed, "I can bear it no longer: this d—d Æolian harp will distract me." This irritable state of the nerves, produced by opium, is relieved by a fresh dose: it becomes absolutely necessary to the patient, and the nervousness produced by the opium of yesterday is relieved by the opium of to-day. The largest quantity of opium I have ever known taken, was swallowed by a pupil in this hospital. He sent for half a pint of the tincture of opium, for which he wrote a prescription. The chemist had not quite half a pint, but he sent somewhat more than seven ounces. Of this quantity the pupil took so much, that not more than a tea-spoonful was left in the phial: he must have taken, therefore, about six ounces and six drachms. As this young man was a dresser of mine, I felt particularly anxious about him, and being informed during lecture that he had taken laudanum, to destroy himself, I immediately went to the house of Mr. PHILLIPS, the surgeon, in

Union-street, where he was lodging. They were very properly walking him to and fro, and a quantity of the flour of mustard in water had been given to him, with a view of producing vomiting, but without success. I ordered him a large dose of the sulphate of zinc, but this did not produce vomiting, though it occasioned irritation in the throat. I directed the sulphate of zinc to be repeated; and on quitting the house I met Dr. MARCET, my colleague at Guy's, to whom I communicated the circumstances. Dr. MARCET immediately said, "Pray give him fifteen grains of the sulphate of copper."—We gave him this quantity of the sulphate of copper, which very shortly after it had entered the stomach, produced vomiting; and he threw up a quantity of liquid smelling very strongly of opium. He was kept constantly in motion, the vomiting was assisted by copious draughts of warm water, and in this way he recovered. Two days after, I met him in the square of the hospital, and asked him how he did. Why, said he, my throat is a little sore from the effects of the sulphate of copper. And how came you to take the opium? said I. Why, sir, said he, I will tell you: I think my teeth are not so white as they used to be; the women observe this, and no longer regard me with the same affection; this it is which makes me miserable. (A laugh). Perceiving that he was mad, I took measures to have him placed under the care of his friends. I have known persons take a drachm of opium day after day, in divided doses. A Turk, who was selling rhubarb at the other hospitals, being asked how much opium he could eat, shewed us how much on his fingers. A drachm of solid opium was given to him, and he chewed it before us. People often ruin themselves by a disposition to take opium I knew a woman in tolerable circumstances, in a village in Norfolk who was in the habit of taking large quantities of opium; she would buy a pint of laudanum at a time, at the chemist's shop, and if any remained after filling her bottle, she would drink it off in a wine glass. This woman was at last unable to buy her opium, and she became a pauper in the parish in which she resided. It is a habit which grows upon persons excessively, and ought never to be indulged. Opium applied externally, will produce poisonous effects; not so soon, indeed, as when it is administered internally, but with equal certainty. If you apply opium over an extensive surface of sore, it will produce obstinate costiveness, and violent pain in the head, a furred brown tongue, and a high degree of fever. I remember a man in the other hospital, who laboured under these symptoms, in consequence of having opium applied over an extensive ulcer. It was not at first thought that the opium produced these effects; but upon its being suspended, the symptoms disappeared.—I have known opium in water applied on the surface of a scald in a child, which, I really believe, occasioned its death. It

produced violent constipation of the bowels, and convulsive motion in the eyes of the child. You should never apply opium over any extensive wound. If opium be injected into the veins of an animal, the pulse will be so quickened, that it can with difficulty be reckoned. It will then become so convulsed that you can scarcely hold it on the table. In about five minutes it is tranquillized, and the pulse gradually sinks until it is hardly perceptible; after an hour the pulse is reduced to from 20 to 30° below the ordinary pulsation, which in a dog is from 110° to 130°. The animal becomes sleepy at the same time that its pulse is reduced. With respect to the treatment of persons who have taken considerable quantities of opium, active emetics should be immediately administered if you have an opportunity of doing so; such as the sulphate of zinc or the sulphate of copper. But it will often happen that you have not these substances at hand; you must endeavour in that case to excite as much irritation as possible in the throat, with a view of producing vomiting. I certainly think, however, after the experiment which you had an opportunity of witnessing in this theatre, and that which was made on the dog in the other hospital, that the instrument for evacuating the stomach affords the best means of saving persons, who would otherwise perish under the influence of opium. I mentioned to you on a former occasion the case of the young lady who had taken opium, in which every means which I could employ for the purpose of producing vomiting proved completely unavailing. When the œsophagus has lost its functions, which it soon does from the influence of opium, no stimulating substances will produce the least effect upon it. I sat hour after hour, by the side of this young lady, watching her progress to dissolution, without being in the least able to prevent it. If however, I had been acquainted with the instrument which has been since invented, I should have used it with the probability of success. This instrument enables us not merely to remove the poison from the stomach, but also to throw in water in considerable quantities, and to introduce stimulating remedies after the opium is removed, for the purpose of restoring the functions of the nervous system; and this in cases where emetics cannot be even swallowed. I certainly do expect the happiest results in such cases from the invention of this instrument. The man who first suggested such an idea deserves well of his country, and they who oppose it until the instrument has been fairly tried and found useless, must be destitute of understanding. Persons who object to a proposition merely because it is new, or who endeavour to detract from the merit of the man who first gives efficacy to a new idea by demonstrating its usefulness and applicability, are foolish, unmanly, envious and illiberal objectors; they are unworthy of the designation either of professional men, or of gentlemen.

I will take this opportunity of mentioning to you, that the new medicine iodine, which is now much employed in enlargements of the glands, in the form of hydriodate of potash is a very active poison, and you should be very much on your guard in employing it. I witnessed very lately an instance of an over dose of this substance producing the most violent convulsive symptoms. The quantity of iodine taken was less than that which is often given, but it was an over-dose to this patient. There were 40 drops of the tincture in a mixture of 6 ounces, and he was desired to take three table-spoonsful three times a-day. He had only taken three-fourths of the mixture when he was seized with the most violent convulsions. His hands, legs, and feet were kept in constant involuntary motion, and he declared that during the whole night he resembled a person in the act of fighting and wrestling. Dr. MARCET mentioned to me a case of a lady on the Continent, who destroyed herself by taking this medicine; she thought she could manage it herself; took it for several days, and increased the doses. She was seized with violent vomiting, purging, excessive pain in the stomach and convulsive symptoms and in this state she died. It is a dangerous remedy when used internally, and I do not think its merits as an internal medicine are at all equal to those which it possesses as an external application.

I shall proceed to say a few words on the mineral poisons.—Arsenic is a poison very commonly taken for the purpose of committing suicide. Very soon after this poison is swallowed, the most excruciating pain is felt in the stomach; besides this effect on the stomach it produces excessive vomiting, violent spasmodic contractions of the muscles of the abdomen, twitchings and convulsive motions of the hands.—The pain is so horrible that much as we may lament the want of firmness which leads to the commission of suicide, we deplore still more the suffering occasioned by a poison which produces such excruciating torture as arsenic. A person who has taken a sufficient quantity of arsenic to destroy life dies about nine hours after having taken it. During that time he suffers the most excruciating agony until within two hours of his death, when his pain is somewhat mitigated; he is then convulsed, his body is perfectly pallid, and covered with a cold perspiration, and his fœces pass off involuntarily. On examination of the body after death a very large quantity of mucus appears to be thrown out in consequence of the irritation produced by the arsenic.—This is a sort of defence set up by nature, a quantity of mucilaginous matter being produced, which is for a time capable of supporting the oxide of arsenic so as to keep it from the coats of the stomach. When the quantity is large, the poison penetrates through this mucilaginous secretion affects the internal coats of the stomach, and produces gangrene. The inflammation however is not general but affects only particular spots. When the poison passes the bounds of the

stomach, and enters the duodenum, it still produces ulcerated spots of a grangrenous colour, the inflammation not being generally diffused. If, therefore, you should be called upon in a Court of Justice to say whether you believe a person to have been poisoned by arsenic, your judgment must be guided by the following appearances: If the person has died by the effects of arsenic, you will find a large quantity of mucus secreted in the stomach, a part of the arsenic supported in the mucus, gangrenous spots in the internal part of the stomach. Having found these appearances, and carefully washed out the stomach, it is better to send the contents to some person who is in the habit of making chemical experiments. A medical man, unless he is a first-rate chemist, ought not to depend upon his own experiments in cases where the lives of individuals may, perhaps, be involved in the decision. He should content himself with carefully collecting the contents of the stomach, and sending them to be analysed by a professed chemist. The dose of arsenic, when it is given as a medicine, is five drops of the arseniate of potash three times a day at the commencement. This dose may be increased at the utmost to fifteen drops. Few stomachs can bear it to that extent, and in general, when I give this medicine with a view to the removal of any periodical disease of the intermittant form, I begin with five drops three times a day, and very rarely increase it beyond twelve drops. The bad effects which this medicine produces after a time often lead us to regret that we should have employed it at all. It occasions pain in the stomach, a disordered state of the bowels, œdematous swellings in the face, and in the hands and feet, from which it is often a long time before the patient recovers. With respect to the external application of arsenic you should be very much on your guard in its employment. I remember a patient in the other hospital who had a fungus in the eye to which the solution of arsenic was very liberally applied; he complained very much of pain in the stomach, and the result was that he died of inflammation in that organ. On examination of the body after death the stomach exhibited the peculiar inflammatory appearances produced by the poison of arsenic. It is a curious circumstance that if arsenic be injected into the blood-vessels it kills by producing inflammation in the stomach. There are few subjects which have been attended to less than the disposition that exists in some parts of the body to be acted upon by certain medicines to the exclusion of other parts. Thus if ipecacuanha be injected into the veins it still acts by producing vomiting; if arsenic be injected it produces vomiting and inflammation of the stomach; introduced in this way it destroys life in three or four hours, and if in large doses, it will sometimes destroy in twenty minuts. If oxymuriate of mercury be injected into the veins it produces the destruction of life by inflmmation, not only of the stomach but of the intestines; when re-

ceived into the stomach it acts both on the stomach and intestines; and when injected into the veins it acts equally on both. Arsenic produces inflammation of the stomach only, and not of the intestinal canal. Tartrite of antimony and ipecacuanha both produce vomiting, when injected into the veins. It appears, therefore, that you can only influence certain parts of the body, by particular medicines, in whatever way those medicines may be introduced into the circulation. Certain substances have uniformly specific effects on particular parts of the body; thus cantharides act on the neck of the bladder, aloes on the rectum, and other medicines which we are in the habit of using, have an influence on one part of the body, to the exclusion of all the rest. This subject is well deserving of attention; it has been but little investigated, and affords an ample field for research and useful discovery. The oxymuriate of mercury is often used for thepurpose of destroying life; it produces vomiting and purging, great depression of strength, coldness of the extremities, and death frequently ensues in the course of a few hours. With respect to the means which should be employed with a view of removing the oxymuriate of mercury from the stomach, I will tell you what I believe to be the best remedy to resort to at the moment, for it will often happen that you cannot obtain the best chemical preparations for that purpose. It is well known that the carbonate of potash or soda decomposes this substance. What I should advise you to do, therefore, would be to mix a quantity of soap with warm water, and making it as thick a lather as you can, give it in large quantities to the patient. I have myself tried this remedy, and my patient recovered, whether *post hoc* or *propter hoc* I will not decide, but my belief is, that I could not have administered a better remedy than that which suggested itself to me on the sudden, if I had been in Apothecaries Hall. The alkali of the soap immediately decomposes the oxymuriate of mercury while the greasy matter sheaths the stomach, and checks the further influence of any portion of the substance which might remain. This, therefore, appears to be the best extemporaneous remedy you can employ in such cases. Diluents should be given to a very considerable extent as well as the alkali. It may appear that I am disposed to think too well of the instrument to which I before adverted, when I state that I believe the syringe may also be successfully employed for the purpose of removing the oxymuriate of mercury from the stomach. I should certainly prefer it to any other means; but instead of using simple water, I should throw in a quantity of soap and water; then withdraw it: I should repeat this operation until the stomach was entirely cleansed. It has been suggested that although this instrument may be used with success for the purpose of removing the vegetable poisons from the stomach, yet it would not succeed in cases

of poison by arsenic or corrosive sublimate. This I do not believe. With respect to arsenic, I am aware that if it were taken in the solid form, and a considerable portion had fallen on the stomach, it would be impossible to remove it, but as it is usually taken in powder, I think the instrument is very capable of removing it, because it will be for a considerable time at least kept in solution by the mucus which is thrown out from the surface of the stomach, and in this state it may be removed. At all events this deserves a trial. They who suppose that the arsenic adheres to the internal coats of the stomach so that it cannot be removed, have never made any experiments with the oxide of arsenic; it does not adhere to the coats, but it is lifted from them by mucus. With respect to the influence of lead, I have but little to observe. In colica pictonum, where we have an opportunity of observing its effects, no inflammation appears to be produced in the stomach. This disease seems to be entirely spasmodic; it will be right to administer large quantities of castor oil, and emetics in it. I have known persons suddenly lose the use of one side from the effects of lead. I once observed that a boy who was at work at my house, had paraplegia; and I asked him how he came to lose the use of his side. Why, sir, said he, very foolishly; I had some lead in my pocket, as I was going home to my master's, and on the road I bought some gooseberries, and put them into my pocket.---- I found that the mixture of lead only made the fruit sweeter; so I finished my gooseberries, and on the following morning I lost the use of my side. I shall conclude this lecture by shewing you the effect of a powerful poison, called Ticunas, with which the Indians in the back settlements of Demerara arm their arrows. There is a very minute portion of the poison on a stick in this little box, which is sufficient, however, to poison every one of you. I shall insert a small particle, I know not what fraction of a grain, into the cellular tissue of a rabbit, and you will see that in the space of three or four minutes the animal will die without appearing to suffer the least pain. It will probably continue to eat the parsley on the table till it dies.

The first rabbit on which the learned professor performed the experiment, walked about the table, and partook of his parsley, but declined dying at the end of four minutes. Whether the poison were not effectually introduced within the cellular tissue, or whether this rabbit were blessed with an idiosyncracy which rendered him insensible to its effects, we will not decide; certain it is that he continued to eat his parsley with a provoking vivaciousness till the moment when we left the theatre. The learned professor introduced a minute portion of the poison within the cellular tissue of a second rabbit, on which it soon produced the usual deadly effects. It appeared to suffer no pain, but at the expiration of three minutes its hinder extremities were paralysed; in three

minutes and a half it appeared to be insensible, and at the end of four minutes it rolled on its back and died.

DINNER OF THE GENTLEMEN EDUCATED AT ST. BARTHOLOMEW'S HOSPITAL.

On Saturday the gentlemen educated at St. Bartholomew's Hospital dined together at the Albion Tavern, Aldersgate Street. About 130 gentlemen were present, and the Chairman on this festive occasion was Mr. LAWRENCE. After the cloth had been removed, and MR. LAWRENCE had said grace, the usual loyal and patriotic toasts were drunk with the usual enthusiasm.

The CHAIRMAN then rose of propose a toast which he was persuaded would meet with the most cordial reception, the health of the Governors of St. Bartholomew's. Without the active support and co-operation of that body, he observed, that the skill, and all the exertions of the medical officers of the institution would be unavailing. Hospitals were not only most invaluable institutions, affording the means of relief for the poor and distressed, when labouring under those infirmities to which their situation in life particularly exposed them; but they had of late years become objects of great importance, as schools of medical instruction. The benevolence which led to their foundation had thus had a more extended operation than was originally anticipated, and through the medium of those who received their education at these institutions their beneficial effects were diffused over the remotest parts of the kingdom. St. Bartholomew's Hospital was particularly fortunate in being superintended by a body of liberal and enlightened governors, who felt nothing like jealousy with respect to the exertions of others, and who were anxious only to give effect to every measure which was calculated to extend the benefits of the Institution. The efforts which they had made in erecting buildings for the purposes of medical instruction, merited the highest praise. To several of these gentlemen they were indebted, not only for the money, which their affluence and rank in life enabled them to give, but for the time which they had devoted to promote the interests of the institution. He had great pleasure in proposing the health of the President, the Treasurer, the Almoners, and other governors of St. Bartholomew's Hospital.

The toast was drunk with applause.

Mr. R. STEPHENSON, the Treasurer, in the absence of Sir J. SHAW, returned thanks in a spirited and appropriate speech.

The CHAIRMAN next proposed prosperity to St. Bartholomew's Hospital. All he would say on the subject was, that such an Institution would, and must continue to flourish.

The toast was drank with applause, and followed by an appropriate air; "*Peaceful slumbering.*"

The CHAIRMAN next rose to propose a toast, which in point of phraseology might perhaps

be objected to on the ground of its being in the oriental style of exaggeration, like the expression 'may your excellency live for a thousand years!' In the sentiment however he was sure they would all concur, 'Perpetuity to this anniversary.'

Mr. R. STEPHENSON said the Chairman had proposed the health of the Governors of that Institution in very kind and flattering terms. In returning thanks on the part of the governors, there was one observation which he felt it important to make. It was true that the governors had endeavoured, as far as possible, to promote the interests of the institution; but what, he would ask, would that hospital have been without the talents by which he now saw himself surrounded? He begged leave to fill a bumper of wine to their worthy president, Mr. Lawrence.

The CHAIRMAN in returning thanks, said, he felt particularly indebted to their worthy Treasurer for the kind manner in which he had proposed his health. He felt it but due to St. Bartholomew's hospital, in the school of which he had been educated, to declare that he was indebted to that institution for all the knowledge he might possess, and all the professional success he had obtained. He had great pleasure in drinking the health of all present.

The CHAIRMAN, in proposing the health of their absent friends, expressed his regret that Dr. WRIGHT was prevented by indisposition from attending this anniversary.

The CHAIRMAN next proposed the health of three distinguished members of the Institution, two of whom were among the oldest members of the College of Physicians, Dr. ROBERTS, Dr. POWELL, and Dr. HUGHES.

Dr. POWELL, in returning thanks, assured the company that the gratitude he felt for the honour which had just been conferred upon him was not 'all my eye and Betty Martin!' (This facetious observation was occasioned by the circumstance of Taylor, the singer, having just delighted the company by a song, the burthen of which consisted of the classical phrase which the learned Physician introduced with so much felicity into his speech. The song was received with enthusiastic applause, and was even encored by a part of the company.)

The CHAIRMAN gave the surgeons of Bartholomew's Hospital. The toast was drunk with loud applause.

Mr. ABERNETHY returned thanks, and begged leave to fill a bumper to the health and prosperity of all present.

The CHAIRMAN rose to propose the health of the founder and great supporter of the school of St. Bartholomew's Hospital; it was scarcely necessary for him to mention the name of Mr. ABERNETHY. The medical school of St. Bartholomew's originated in him; before his time, nothing in the shape of regular Lectures on the science of surgery had been delivered at that Institution. He had now the satisfaction of seeing the work of his own industry and genius raised to the highest pitch, and equal to any

other medical school in the world. It was unnecessary for him to enter more at large into this subject, because they were all aware of the great merits and exertions of the individual whose health he now proposed. As professional men they were aware that Mr. ABERNETHY had contributed more than any other individual to give a philosophical character to the medical science. They were aware also of his high character in all other points connected with his public conduct, and that in independence of mind, in integrity, in liberality of principle, in a firm and consistent adherence to that liberality of principle, in all those points, in short, which could add lustre to the professional character, Mr. ABERNETHY might be equalled, but could not possibly be surpassed.

The health of Mr. ABERNETHY was drank with loud and continued applause.

Mr. ABERNETHY, in returning thanks, said, he had certainly endeavoured to learn his profession to the best of his ability, and he felt concious also that he was at all times free to communicate what he knew. He was not conscious, however, of any superiority in discharging his duties as a teacher. He had endeavoured to excite in the minds of the students the same enthusiasm which he felt himself for the prosecution of a noble science, and if he had endeavoured to create enthusiasm, he had luckily been successful, for he had excited the desire of studying the profession with diligence in the minds of many who possessed far greater abilities than himself. When he heard himself designated as the founder of the school of St. Bartholomew's, he really felt considerable embarrassment, because it was a designation to which he could lay no claim. He cordially concurred in wishing continued and unremitting prosperity to that institution, and with every reciprocal sentiment of good-will, he begged leave to drink the health of all present. (Applause.)

The CHAIRMAN said that the health of one of the teachers of Bartholomew's school, had just been drank; and he was going to propose a similar mark of respect to the talents and genius of the others. Bartholomew's school was supported by professional men who did every thing in their power to fill the important offices which they held, and he would therefore propose the following toast:—"Health to the other teachers of Bartholomew's school; Dr. HUGHES, Doctor GOOCH, and Mr. STANLEY." The toast was received with great applause, and drank with three times three.

Dr. HUGHES rose to offer, in the name of his colleagues, their sincere acknowledgment for the honour that had now been conferred on them; he was sure that he was expressing their sentiments, as well as his own, when he added that it was their sincere wish to discharge their duty in such a manner as to be deserving of approbation, and it was their pride at the present moment to have obtained it.

The CHAIRMAN said, that he

was about to propose the health of a gentleman, whose kindness to the sick, and zeal in the discharge of his duty, were well known to all connected with the hospital, he meant the clergyman of Bartholomew's Hospital. The health of the Rev. Mr. WILKES was then drank with applause.

The Rev. Mr. WILKES returned his best thanks for the handsome manner in which the Chairman had mentioned his name. This was only one out of many marks of favour which he had received from the medical officers, for the civil were continually receiving marks of attention and kindness from the medical officers of the establishment, and it was their pleasure as well as duty to be always in harmony with those gentlemen; he wished health and prosperity to the medical and chirurgical officers of Bartholomew's Hospital.

The CHAIRMAN said he was about to propose the health of three officers belonging to the Hospital, who, although not directly connected with the medical school, were at all times most ready and willing to promote its interest, and whose aid and assistance had been often afforded. The health of Mr. WOOD, Mr. WILLBY, and Mr. WATTS.

Mr. WILLBY, steward to St. Bartholomew's Hospital, returned thanks for the manner in which his own health, and that of his colleagues, had just been drunk, and said that no exertions should be wanting on their part to promote the interests of the institution.

The CHAIRMAN then proposed the health of the Officers who had held official situations in the hospital, and to whom the establishment was indebted for many valuable services, but who, *from some cause or other*, had retired. "The health of the retired Officers" was then drank.

The health of the physicians and surgeons of other hospitals was next drank; several other toasts were given, and the festivity of the evening was kept up to a late hour.

CHEMISTRY.

We stated in our last number, the maxim generally adopted by chemists, viz. "whenever bodies pass, from a rarer to a denser state, heat is invariably produced." That this is incorrect as a general fact we have no hesitation in affirming. We have observed in many of our experiments, that, notwithstanding heat is very frequently produced by the passage of a body from a rarer to a denser state, (as for instance, in those we detailed in our last number,) yet it sometimes happens that heat is given out in large quantities when bodies pass to an opposite state, (*i. e.*) when they enlarge or become expanded in volume. The frequent occurrence of similar facts have so changed our opinions respecting the cause and nature of heat from those generally received, that we set aside the notion of *latent heat* altogether, as absurd.—We should observe here for the information of some

of our readers, that the term "latent heat" is employed by chemists, to express a supposed quantity of the *matter of heat*, or caloric, which is presumed to exist in combination with another body; and which they state to be insensible to our feelings or our thermometers, in virtue of a certain law of combination, analogous to chemical affinity. This latent heat they believe is liberated, and becomes "sensible heat," when bodies change their forms, or pass from a rarer to a denser state, in consequence of the *capacity*, as it is called, of the bodies for heat being altered by this change of state. This implies, and which they affirm to be true, that heat is material. It is said, in illustration of this part of the subject of latent heat, that if we abstract a given portion of it from steam, we reduce the steam to water; and if from water we abstract another proportion of latent heat, the particles will fall nearer each other, and the water will become solid or ice. On the other hand, if we apply heat to ice, it will first become liquid, and on the application of another portion it will be converted into vapour, or assume the æriform state.

On this view of the subject, all fluids are nothing more than a mixture of some solid particles of matter with latent heat, and they differ from gaseous bodies simply in possessing a smaller portion of it. From this it follows, that whenever a gaseous body is condensed into a liquid; or a liquid body is condensed into a solid; the body so condensed must necessarily part with a large portion of latent heat, otherwise the change could not take place.

If this doctrine be true, heat must always be given out whenever a body is condensed in volume; a conclusion on which the above maxim originated, we believe, rather than from accurate observation. As the doctrine of the materiality of heat teaches us that all bodies owe their state of density to the quantity of heat which is mixed with them, gaseous bodies must contain more latent heat than liquids, and liquids more latent heat than solids; for instance, steam being æriform, contains more latent heat than water, and water being liquid more than ice, which is solid, so that the different states of bodies, at different times, neccessarily presumes a greater portion of latent heat in combination with them at one time, or in one state than in another.

Many of the phenomena of heat which take place in matter on a change of form, may be accounted for on this theory; but there are others, as we have previously observed, which cannot be reconciled to it, but on the contrary, appears to us to establish a very different opinion. From among the many experiments to which we allude, we shall select the following, and regret that the pressure of other matter prevents us from extending them to greater length.

Pass up into a large jar of ammoniacal gas, (which agreeable to the above theory, is a mixture of ammonia and the matter of heat,) standing over mercury,

a few drams of water; the whole of the ammonia will instantly be absorbed by the water and pass into the fluid state, yet little or no heat will be produced: now according to the foregoing theory considerable heat ought to have been set at liberty by the great condensation it suffers, and to have become sensible; or else what becomes of that large portion of latent heat, which was mixed with, and necessary for the ammonia to exist in the state of gas. Again, mix two jars of carbonic acid gas with one of ammoniacal gas, both the gases will be instantly condensed into a solid (Carb: Ammonia), and notwithstanding the condensation has been so great in both gases, yet little heat will be produced. We again ask what becomes of the heat which preserves the carbonic acid in the state of a gas, as well as that which was employed to constitute the gaseous form of the ammonia? Mix together a jar of ammoniacal gas, and a jar of muriatic acid gas; both gases will be condensed into a solid the mur. of ammon. and yet no heat will be liberated.

We might extend these experiments a great length, not only in gaseous, but also in liquid and solid bodies, but we do not think it necessary to do so, even if more of our Journal could be devoted to the subject; as those above enumerated must convince every impartial person who will take the trouble to examine them correctly, that a change of form does not produce a comparative increase of temperature, when bodies pass from a rarer to a denser medium; on the contrary, as we stated in the commencement of this paper, the opposite effect is sometimes produced. This we shall have occasion to notice hereafter.

The second part of the law, namely, "that all bodies passing from a denser to a rarer state absorb heat or caloric" is equally erroneous with the first. But as we stated experiments in support of the opinion, that all bodies give out caloric by condensation, before we submitted our experiments against it to our readers; so also we shall detail some experiments to prove that cold is produced when bodies pass from a denser to a rarer state, before we proceed to state those which support an opposite opinion: because we wish our readers to have an opportunity of judging for themselves, and forming their own conclusions on this important subject. We must defer it, however, until next week, when we shall again resume the subject.

ST. THOMAS'S HOSPITAL.

Symptoms of Stone; operation of lithotomy proposed, not performed; *post mortem* examination, no stone found; fungus of the bladder.

STEPHEN W. æt. 61, labourer, was admitted into St. Thomas's Hospital, (Isaac's ward) Feb. 15th, 1824, under the care of Mr. TRAVERS, with symptoms of stone. The patient complained of great pain in making water, which extended down the thighs, and was very severe

at the extremity of the penis. His urine would, when passing in a full stream, cease for an instant, and then flow again; it was sometimes bloody, particularly after taking exercise; at other times turbid, and giving a white sediment. He also had frequent disposition to void his urine. These symptoms had existed for some time prior to his admission. The man was sounded by Mr. TRAVERS, as well as by the other surgeons belonging to these institutions, most of whom believed that they felt a stone in the bladder, so strong was the impression on their minds of a calculus being there, that the patient was ordered to be brought into the theatre, for the purpose of submitting to the operation of lithotomy, but on one of the surgeons (Mr. KEY) stating that he could not feel the stone, Mr. TRAVERS very properly declined operating. A short time after this, Sir A. COOPER, one night after surgical lecture, sounded the patient, and concurred with Mr. KEY that there was no stone; these two, however, were the only surgeons who were not of opinion that there was a calculus in the bladder. The balsam of copaiba, the liquor potassæ with opium and other medicines of a similar nature were ordered but without producing any good. The symptoms became worse, the patient had very distressing pains in the loins and his feet and legs swelled considerably. He was cupped in the loins, a warm plaster was applied to the part, leeches to the perineum, and anodyne injection were used; he also took a good deal of opium but without affording anything more than temporary relief. He gradually sunk, and on Wednesday (May 4th) he died, having lived nearly three months from the time of his admission.

Examination of the body.—The body was examined twenty six hours after death by one of Mr. TRAVERS's dressers, in the presence of two or three pupils.

External Appearances.—Body emaciated, and pale, excepting the lips which were livid.

Chest.—Right lungs were adhering to the pleura costalis, laterally and posteriorly, and to the diaphragm inferiorly; of a livid hue posteriorly, but of the natural colour anteriorly, internally they presented a redder appearance than natural. Left lungs were adhering in a similar manner to the pleura costalis as the right. The adhesions on both sides appeared to be of old standing, although those on the right were firmer than those on the left side. Left lungs in the same state as the right. Pleura costalis presented nothing remarkable, excepting where it had adhered to the lungs, and then it was covered with white lymph which was thin but firm. Right bronchia red and contained some muco-purulent matter—left, natural and empty. Heart was of the usual size, and not in any way diseased; the left ventricle contained some dark coloured blood. The aorta was rather enlarged at its arch.—There was no effusion whatever either into the chest or pericardium.

Abdomen.—Liver was large,

but healthy; gall bladder distended with bile; the vessels on the outer coat of the stomach were injected with blood; intestines healthy. The organs of generation were the parts to which the attention was particularly directed; previous to examining them, a sound was introduced into the bladder, in order to ascertain the sensation that would be communicated by it, which was as follows:—when the sound was pushed against the bladder, nothing more than usual could be felt, but when moved across with a rotatory motion, it appeared as if there was some foreign body in the bladder, but no sound could be heard. The bladder was then opened. On the finger being put into it, a considerable roughness could be felt, and on looking into it two fungous tumours, each about an inch long were seen projecting just at the point where the ureters enter the bladder.—The internal coat of the bladder was very red, and ulcerated in one or two places. The bladder was very much contracted in size. Both kidneys presented the same appearance externally; they were rough on their outer surface, of a pale yellow colour, and covered with tubercles or small yellow bodies of the size of a millet seed which were rather hard. On being cut into, the kidneys were found to be considerably disorganized, presenting throughout a yellow appearance. There was a little urine in each. The left kidney was a little larger than the right. Ureters—left of the usual size and healthy. Right considerably distended and inflamed.

Prostate not much enlarged.

Head and spinal marrow were not examined.

ELIZABETH RAIGEN.---Case continued from page 156.

Compound Fracture—Amputation—Death.

Thursday, April 28th.---The patient is extremely low; pulse small and weak; tongue dry and covered with a brown fur in the middle, but red at the edges; countenance indicative of great prostration of strength; indisposition to speak; bowels opened three or four times by some castor oil. Discharge from the wound increased in quantity, and of a very offensive smell; slight blackness on the front of the leg as if the part were threatened with gangrene; wine porter and stimulating medicines ordered to be continued.

It being apparent that the patient was sinking fast, it was thought that the only chance for her life was to remove the limb, and consequently an operation was proposed, to which she consented. Mr. TRAVERS then said that he would perform it to-morrow at one o'clock.

29.—Patient rather weaker than yesterday; at half-past one o'clock she was brought into the female operating theatre to undergo the operation; the tourniquet being applied, and the artery in the groin compressed as well, an assistant supported the limb whilst the operator proceeded to amputate about three inches above the knee joint. The usual steps of the operation having been completed, great care was taken that as little blood as possible should

be lost; three vessels were soon secured, the wound was dressed, and the patient removed from the theatre in twenty minutes from the time she was first brought in. About four ounces of blood were lost. During the operation the patient was quite faint — and brandy and wine were administered, which revived her a little.

On examining the limb there was found an oblique fracture of the tibia and fibula, about three inches above the ancle joint, together with an extensive laceration of the integument extending from two inches below the head of the tibia to the inner malleolus; no attempt at union of the bone had been set up.

The patient was pretty easy after the operation; but gradually sank and died on Monday, (May 3rd). The body was not examined.

We will ask Mr. TRAVERS one or two questions concerning this case. 1. If the operation afforded the patient a chance of recovery on the Friday, *a fortiori* would it not have given her a better chance if it had been performed on the Thursday when it was first suggested? 2. If this be true, why was the operation deferred till the Friday?

Few accidents have been admitted this week.

MIDDLESEX HOSPITAL.

April 26th.—Daniel Leary, a robust, healthy man, æt. 28, was brought to the hospital about 5 o'clock this evening, with a very serious laceration of the scalp, and injury of the cranium. From the accounts given by his fellow-labourers, it appeared that a stone weighing several hundred pounds had fallen on his head.* A considerable quantity of blood had been lost previous to his admission, apparently from the anterior temporal artery, which had been divided by the accident, as also from other vessels, which will be more evident as we proceed. His pulse at this period, was about 65, and by no means remarkable, and his mental faculties were but little impaired.

On examination, it was found that the scalp had been divided over the vertex of the head, about an inch behind the coronal suture, which extended irregularly from the squamous portion of the temporal bone on the right side to the same point on the left, where it diverged, and ran towards the orbit. From the line of separation thus produced, the parietal and frontal bones were denuded † as far down as the transverse suture, leaving the supercilliary ridges and the superior parts of the orbits exposed. The scalp which covered these bones was at the same time turned down over the face, and descended as low as the mouth. The frontal bone was fractured across in a transverse direction, commen-

* It appears that the stone weighed five or six hundred weight, and was about to be lowered by means of a jack or pulley. It is most probable therefore, that the gravitation of this heavy body was, in some degree modified or diverted by these means.

† In several places the bone was deprived of the pericranium as well as the scalp.

cing about an inch and a quarter above the external angular process on the left side, and terminating by a fissure in the right orbit. From the point at which the fracture on the left side commenced, a fissure was also observed running upwards towards the parietal bone and extending downwards at rather an acute angle into the orbit.

The inferior portion of the frontal bone thus separated, was depressed about a quarter of an inch beneath the superior part, and in order to raise it, the acute angle above described was removed by HEY'S saw; but the subsequent attempts to raise the bone not being successful, the trephine was applied at the superior part, and opposite an obtuse angle of the undepressed portion of the frontal bone. The elevator being now employed, the depressed bone was returned into its proper situation without farther difficulty. At this stage of the process, it was discovered that the dura mater had been separated from the cranium by the violence of the blow, and that this membrane, together with the anterior lobe of the cerebrum, had receded to a considerable distance from its natural situation, so as to leave a vacuity, or an empty space below the seat of the injury.

The pulsation of the brain could, however, be distinctly perceived; and on the depressed portion of bone being returned to its proper level a considerable discharge of arterial blood followed. Upon carefully introducing the little finger through the opening made by the trephine, and passing it downwards towards the orbit, it was discovered that the orbitar plate of the temporal bone had suffered materially; and three or four loose portions of it were accordingly removed by the forceps. This part of the operation could not have failed to have been extremely satisfactory to the operator,* for had the bone been returned to its natural situation without the use of the trephine, the above insulated parts could not have been removed, and the irritation caused by them must, ultimately, have been extremely prejudicial to the patient, and perfectly decisive of his fate.

Some oiled lint was now placed over the aperture when the scalp was restored to its natural situation, and restrained by strips of adhesive plaster, over which some simple dressing was placed and secured in the ordinary way by a night-cap. It is a singular fact, that this man's pulse did not differ throughout in any material degree from the standard of health. On his admission, as we have observed above, it was 65, and after the operation it did not vary 5 beats in the minute. During the progress of trephining he frequently requested to be allowed to drink, and his sensorial powers did not at any period appear to be much affected.

27.—Last night, after the operation, an enema of house medicine was exhibited. About ten o'clock he became restless and uneasy, and manifested some

* Mr. CARTWRIGHT.

aberration of mind or confusion of intellect. Sixteen ounces of blood were taken from the arm, which produced an evident effect on the pulse, and the straight-jacket was ordered to be resorted to in case of need. To-day his pulse is 70, and rather weak; tongue a little furred; skin natural and his bowels have been well opened by the enema exhibited yesterday. There has been a slight oozing of a coloured fluid thro' the dressings. He has some disposition to sleep, and at these periods a sniffling noise may be heard, arising probably from the absence of a free passage for air through his nostrils. His breathing is, however, oppressed and anxious, though in a very trifling degree. His senses, however, do not appear to have suffered.

℞: Pulveris Antimonialis gr. iij.

Hydrargyri Submuriatis gr, jj. fiat Pulvis ter die sumendus.

28.—The wound was dressed to day and looks remarkably healthy. The brain has resumed its natural situation, and there appears no cause for, or evidence of compression. The tongue is slightly furred and of a yellow colour, skin is natural and his bowels have been open twice—the pulse during the dressing rose about ten beats in the minute, and again sunk to the original standard, on his being left in a state of quietude. To day it is sixty and rather weak—he is perfectly sensible and takes the same medicines.

29.—Pulse seventy and tolerably free—bowels open two or three times in twenty four hours, tongue still a little furred—skin in no respect particular. He has some disposition or propensity to sleep, but is easily roused and is perfectly sensible, his head has been kept cool by a cloth wetted with the lotion of acetate ammonia; complained to day of a soreness of the mouth, powders continued.

30.—The wound was again dressed to day and looked remarkably healthy, pulse seventy and rather weak, bowels regular, skin rather dry, and tongue a little furred but moist; the patient is perfectly rational and complains of a slight pain in the chest, there is however, no external appearance of injury in that quarter, the swelling in the right eye has greatly diminished and the faculty of vision is now exercised in it.

May 1st.—No particular alteration.

2.—Wound dressed to day and looks well, pulse seventy and tolerably full, bowels not open since yesterday, mouth rather sore, tongue tolerably clean, senses unimpaired, skin rather dry, powders discontinued.

℞: Magnesiæ Sulphatis, ℥i.
Spiriti ætheris nitrici, ℥i.
Infusi Rosæ, ℥iss. fiat haustus ter die sumendus.

Hirudines sex brachio—which was slightly injured.

3.—The wound was again dressed in the usual way. The dura mater was found to be granulating and the scalp, throughout the line of division, suppurating healthily. Bowels open twice. His skin to day is rather hot and dry; tongue a little furred but moist; pulse 65, weak; sensorium not affected.

4.—Pulse 55 soft; tongue furred and dry, with a brownish crust upon it; skin natural; bowels open last night; granulations springing up from the dura mater; healthy suppuration from the wounded scalp; is not quite so well as yesterday. *

Two of the cases of concussion mentioned in our last have been discharged, the other still remains here but does not appear to have any bad symptoms. The boy Angel has nearly recovered the *perfect use* of his left side and his general health is good.

ST. BARTHOLOMEW'S HOSPITAL.

ROBERT SMITH'S *case continued from page* 158, *vol.* iii.

30th.—Has had a restless night, dozing only at intervals; complains of some pain in the lumbar regions; pulse 100, exceedingly small, and weak: tongue still dry and brown; skin hot and feverish; no appetite. Saline draughts; pills discontinued. Venesectio ad ℥ xvi.

1st.—Slept little; general debility; takes no nourishment, and appears almost in a comatose state. Pulse rather fuller than yesterday; breathing laborious, but not stertorous.

2nd. He remained nearly in the same state, pulse alternately sinking and rallying, until half-past eight, when he expired.

In reporting this case we omitted to state a slight injury to the scalp; it had the appearance of a graze; at the time the injury was received, the patient did not complain of any injury in the part, but, from his insensible state during the thirty-six hours, preceding his dissolution, we are led to suppose the brain was more or less affected.

Post mortem examination of the body.

The body was examined a few hours after death by Mr. LAWRENCE in the presence of some of the pupils.

The first thing that presented itself, was an extensive fracture of the skull; a large quantity of pus was found under the dura mater, the arachnoid was quite opaque, and the ventricles distended with water. Nothing remarkable was observed in any other part of the body excepting at the hip where there was found a fracture of the neck of the thigh bone, within the capsule.

Neither the fracture of the cranium, nor that of the femur had been ascertained during life. So much for Bartholomew surgery. The patient was under the care of Mr. LAWRENCE.

The accidents admitted here this week are a fractured patella, dislocation of the left os humeri; fracture of the tibia and fibula; case of cut throat, and a child with a severe burn.

Sir LUDFORD HARVEY has resigned his situation as surgeon to this institution; Mr. LAWRENCE will succeed him. There are three or four candidates for

* Continued Page 213

the assistant surgeonship, but we are unwilling to say any thing at present about the election, that may injure either party. But there is one circumstance to which we must allude, which is, that one of the candidates has not served an apprenticeship to the hospital, and if he be duly qualified for the post, (which we believe him to be) we should be heartily glad for him to obtain it. The present system of electing hospital apprentices to fill the office of surgeons in preference to all others, without any reference to the respective merits of the candidates will not, we feel convinced, last very long. The medical profession in this country has existed for centuries without being subjected to the controul of the press; but the times are changed, and we trust that the repeated exposure of existing abuses will at last produce their reformation.

ST. GEORGE'S HOSPITAL.

Friday, April 30.—Two operations were performed at this hospital to-day; both the patients were females, and both about the same age—30 years.

The first, performed by Sir EVERARD HOME, was the removal of a large tumour from the arm, situated mid-way between the elbow and shoulder joints; it consisted of a fatty substance, and was, at its broadest part, nearly six inches in diameter.

In the course of the operation, a rather considerable branch of the brachial artery was wounded, which was secured by a ligature, and the wound closed by drawing the integuments together by strips of adhesive plaster.

The other case was an amputation of the thigh, by Mr. EWBANK; the incision was made three inches above the joint, and four arteries required tying.

On examination of the leg after the operation, the cartilages of the knee-joint were found to be destroyed by ulceration, though the injury of the adjacent parts was not so considerable as (Sir EVERARD HOME observed) to account for the violent pain, previously experienced by the patient.

WESTMINSTER HOSPITAL.

Saturday, May 1.—Nothing particular has happened at this hospital to-day, except Mr. LYNN, jun operating for hydrocele, on JOHN SHADD, æt. 35. The disease had existed for some months, and had been before operated upon, but without effecting a cure. The fluid evacuated was of the colour of chocolate, and consisted of water mixed with a large proportion of blood, altogether about a pint in quantity. The sac was not injected after the operation.

Wednesday, May 5.—The scrotum distended as much as before the evacuation of the

fluid on Saturday last, owing to the vessels on the inside pouring blood into it; thus rendering the operation, as far as we can judge at present, completely ineffectual.

JOHN LONGHURST, who was admitted into this hospital under the care of Sir ANTHONY CARLISLE, a month ago, with a fractured patella, is recovering very rapidly; the bone is united closely, so much so, that instead of the depression felt usually in these cases on its surface, a small narrow edge is plainly perceived, thus clearly proving that the two portions of bone are adhering to each other, by an osseous deposit having taken place, and that the mode of treating such cases, by bringing the fractured parts together, is superior to any in use at the present day. See Page 215

No accidents of importance have been admitted here since our last report.

NOTICE TO CORRESPONDENTS.

W. W. is entitled to our sincere thanks; if he will call at NEW CHURCH COURT he will find a letter for him.

We will comply with Y.'s request, and give a case in Latin next week.

We are obliged to γ. for his suggestion, but *bronchia*, in the plural, is not a typographical error; the Greek word from which it derives its origin is βρογχος, and therefore the plural is bronchia---bronchiæ is not correct.

The Index to Vol. I. was published with the first number of Vol. II.—It is again out of print, but will be reprinted in a few days.

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